found that bidi delivered a large amount of tar, nicotine and other toxic chemicals and also that, because of the less porous tendu leaf, carbon monoxide level in bidi smoke was higher in bidi than in cigarette.

Sanghvi, Jayant & Pakhale in 1980 found higher levels of tar and nicotine in Indian cigarettes than in the west.

Based on Khanolkar's 1950 study on tobacco habits, Sanghvi estimated (1989) patterns of consumption as follows :

Figure - 16

Estimated No. of adults in millions aged 15 years and over in India, with different tobacco habits

50 - 55 to 80 - 83

| Tobacco habit | 1950-55 | 1965-70 | 1980-83 |
|---|---|---|---|
| Cigarette smoker | 6 | 18 | 22 |
| Bidi smoker | 58 | 79 | 136 |
| Tobacco chewer | 47 | 49 | 31 |
| Total population | 230 | 300 | 400 |

(assumptions made, bidi/cigarette smokers smoke on average 10/day, chewers consume 3g/day. A cigarette on average contains 1g of tobacco, bidi 0.25g, thus a cigarette smoker smokes 3.65 kg bidi smoker 0.91 and a chewer 1.1 kg per year)

According to S P Gupta (1989) reliable data in India on the effect of tobacco on cardiovascular diseases was unavailable and consequently research data had to remain tentative.

Jindal and Malik (1989) found a relationship with cheroot smokers in Shimla hills and south-east Orissa and prevalence of chronic bronchitis and emphysema. Gupta, PC et al. in a major age-adjusted relative risk study in Ernakulum, Kerala and Srikakulam, Andhra Pradesh, over 10 years in 1980 and 1984 concluded,

250405798

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

that extra death per year attributable to the use of tobacco would be a maximum of about 630,000, going up to 1,000,000.

Notani et al. found (1989) the highest proportion of morbidity cases attributable to tobacco and therefore avoidable was in cancers of the upper alimentary and respiratory tract (63%). However since these cancers form only 1% of the total morbidity, the overall impact was limited. Next in rank came chronic obstructive lung diseases (COLD) with 45% avoidable cases and coronary heart diseases (CHD) 21% avoidable cases, the avoidable proportions being much higher in males (55%) than in females (6%).

They estimated age - sex - specific deaths from upper alimentary and respiratory tract cancer deaths to be 293,500, from CHD 450,000 and from COLD 350,000 in 1986.

2504065799

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

## Toxicity in Indian Tobacco Types

Following toxicities have been found in various types of tobacco products in India :

a)

Figure - 17

| | Bidi | Cigarette (India) |
|---|---|---|
| Tar | 23-41 mg | 19-28 mg |
| Nicotine | 1.7-2.8 mg | 0.9-1.8 mg |
| C.O. | 7.7 vol. % | |
| Hydrogen cyainde | 668µg to 904µg | 366-638µg |
| Phenols | 129-273µg | 118-226µg |
| Benzo (a) pyrene | 108-144 ng | 85-114 ng |

Notani, Jayant and Sangvi, 1991
(Cigarette, based on 1974 study)

b) Gaseous components of the cigarette smoke, not available.

c) In chewing tobacco several N-nitroso compounds have been identified.

d) 24g of hookah tobacco smoked through 150 ml of water gave total (dry) particulate matter of 9.1 mg & nicotine of 0.55 mg for a total smoking time of 35 minutes.

### Age distribution

Distribution by age in years in India in 1991 was as follows :

Figure - 18

| Age groups (% of total population) | | | |
|---|---|---|---|
| 0 - 14 | 15-44 | 45-65 | 65 + |
| 35.6 | 60.3 | 13.9 | 4.1 |

(1991 total population 837 million)

250406580D

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

Age specific deaths in India (1984) — Figure - 19

(Percentage)

| Age | Rural | Urban |
|---|---|---|
| 0 - 4 | 46.2 | 23.2 |
| 45 - 49 | 8.5 | 7.7 |
| 50 - 54 | 13.8 | 12.0 |
| 55 - 59 | 18.3 | 18.4 |
| 60 - 64 | 33.8 | 31.2 |

Consumption in India

NSS reports (43rd round 1987/88) on prevalence of tobacco habits in India as follows :

a) Consumption of tobacco amount, rural, urban :

In rural India about 34% of the male population are found to use tobacco in some form regularly, while 24% are regular smokers. Only 10% of the female population in rural India consume tobacco regularly in any form. Of the females in rural India only 2% smoke regularly. Females, in general, show a comparatively greater inclination to consume other forms of tobacco.

In urban India 24% of males consume tobacco regularly while 18% are regular smokers. Only 5% of urban females consume tobacco, of whom only 0.7% are regular smokers. In urban India, the proportion of female casual tobacco consumers is found to be very negligible.

b) Consumption of tobacco by type :

20% and 17% of the total males are exclusive smokers in the rural and urban India. The proportion of female smokers are 2% and 0.7% in the rural and urban India. Chewing claims 8% of rural males and by 5% of urban males. For females it is 5% in rural India and 3% in urban India.

For snuff and burnt tobacco etc. the proportions of female consumers in both the rural and urban areas are higher compared to that of male consumers. For various other

250406580

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

combinations, the incidence seems to be negligible. There is predominance of smoking seen amongst males but in females other forms ot tobacco consumption were more prevalent.

c) **Consumption of tobacco by age and sex :**

It is seen from the table below that tobacco use increased with age. Males were predominantly smokers and about 50% of them in rural areas & 40% in urban areas were in the habit of smoking, after attaining 25 years of age, around 70% of the rural males and around 50% of urban males found to be consuming tobacco in any form after attaining 25 years of age. Consumption of tobacco in any form was least in the age group 0-14 years.

Figure - 20

**Number of persons reporting consumption of tobacco in various forms either exclusively or in combination per 1000 persons by sex : All-India rural and urban**

| Forms of tobacco consumption | Rural | | Urban | |
|---|---|---|---|---|
| | Male | Female | Male | Female |
| Smoking (SM) | 199 | 21 | 169 | 7 |
| Chewing zarda etc. (CHW) | 77 | 47 | 46 | 28 |
| Snuff (SN) | 4 | 7 | 3 | 4 |
| Burnt tobacco, powder, paste (BT) | 12 | 26 | 7 | 14 |
| SM and CHW | 41 | 3 | 22 | 1 |
| SM and SN | 1 | - | 1 | - |
| SM and BT | 6 | 1 | 3 | - |
| SN and BT | 1 | 1 | - | - |
| CHW and BT | 7 | 5 | 4 | 3 |
| CHW and SN | 1 | - | - | - |
| SM, CHW and SN | - | - | - | - |
| SM, CHW and BT | 2 | - | 1 | - |
| SM, SN and BT | - | - | - | - |
| CHW, SN and BT | - | - | - | - |
| SM, CHW, SN and BT | 1 | - | 1 | - |

(Source : NSSO Govt. of India 43rd round 1987-88)

2504065802

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

Figure - 21

Number of persons reporting smoking and/or consumption of tobacco in any form regularly or casually per 1000 persons by sex in Rural areas.

| State/Union Territory | No. of persons reporting consumption per 1000 persons | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Male | | | | Female | | | |
| | Smoking | | Consumption of tobacco in any form | | Smoking | | Consumption of tobacco in any form | |
| | Regularly | Casually | Regularly | Casually | Regularly | Casually | Regularly | Casually |
| Andhra Pradesh | 342 | 12 | 355 | 12 | 54 | 3 | 103 | 7 |
| Assam | 279 | 39 | 352 | 56 | 23 | 19 | 99 | 68 |
| Bihar | 134 | 23 | 313 | 24 | 41 | 3 | 62 | 5 |
| Gujarat | 332 | 7 | 354 | 8 | 15 | 3 | 94 | 6 |
| Haryana | 338 | 16 | 349 | 12 | 38 | 7 | 48 | 8 |
| Himachal Pradesh | 334 | 10 | 337 | 10 | 24 | 2 | 24 | 2 |
| Jammu & Kashmir | 226 | 13 | 295 | 12 | 35 | 5 | 69 | 6 |
| Karnataka | 216 | 13 | 280 | 14 | 2 | 1 | 96 | 10 |
| Kerala | 251 | 31 | 284 | 33 | 5 | 2 | 88 | 11 |
| Madhya Pradesh | 224 | 15 | 384 | 10 | 5 | 1 | 92 | 4 |
| Maharastra | 120 | 12 | 378 | 15 | 5 | 1 | 242 | 12 |
| Manipur | 329 | 21 | 353 | 29 | 125 | 37 | 147 | 62 |
| Meghalaya | 381 | 20 | 396 | 34 | 104 | 42 | 213 | 73 |
| Nagaland | - | - | - | - | - | - | - | - |
| Orissa | 162 | 25 | 413 | 21 | 13 | 5 | 322 | 11 |
| Punjab | 96 | 6 | 111 | 6 | 1 | - | 2 | 1 |
| Rajasthan | 307 | 9 | 328 | 9 | 29 | 2 | 45 | 2 |
| Sikkim | 188 | - | 219 | 1 | 109 | 2 | 109 | 2 |
| Tamil Nadu | 167 | 13 | 266 | 17 | 2 | 1 | 118 | 9 |
| Tripura | 426 | 7 | 455 | 12 | 65 | 6 | 181 | 18 |
| Uttar Pradesh | 254 | 13 | 345 | 10 | 26 | 3 | 63 | 4 |
| West Bengal | 340 | 16 | 381 | 15 | 20 | 3 | 185 | 7 |
| Andaman & Nicobar | 178 | 28 | 370 | 32 | 20 | 6 | 103 | 24 |
| Arunachal Pradesh | 388 | 191 | 190 | 189 | 31 | 40 | 173 | 43 |
| Chandigarh | 345 | - | 375 | - | 27 | 18 | 45 | - |
| Dadra &Nagar Haveli | 305 | 4 | 337 | 11 | 5 | - | 29 | 3 |
| Delhi | 204 | 3 | 221 | 3 | 11 | - | 33 | - |
| Goa,Daman & Diu | 263 | 4 | 316 | 4 | 9 | - | 77 | - |
| Lakshadweep | | | | | | | 290 | |
| Mizoram | | | 500 | | | | 350 | |
| Pondicherry | | | | | | | | |
| All India | 240 | | 340 | | 20 | | 100 | |

(Source : N.S.S.O. Govt. of India 43rd round 1987-88)

25040965803

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

Figure - 22

Number of persons reporting smoking and/or consumption of tobacco in any form regularly or casually per 1000 persons by sex in Urban areas.

| State/Union Territory | No. of persons reporting consumption per 1000 persons | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Male | | | | Female | | | |
| | Smoking | | Consumption of tobacco in any form | | Smoking | | Consumption of tobacco in any form | |
| | Regularly | Casually | Regularly | Casually | Regularly | Casually | Regularly | Casually |
| Andhra Pradesh | 215 | 15 | 223 | 19 | 16 | 2 | 48 | 4 |
| Assam | 225 | 45 | 310 | 38 | 5 | - | 39 | 18 |
| Bihar | 77 | 22 | 220 | 28 | 9 | 1 | 29 | 4 |
| Gujarat | 176 | 5 | 217 | 8 | 3 | 2 | 38 | 4 |
| Haryana | 249 | 15 | 265 | 20 | 16 | 5 | 21 | 5 |
| Himachal Pradesh | 303 | 5 | 304 | 5 | 8 | - | 8 | - |
| Jammu & Kashmir | 275 | 15 | 287 | 15 | 16 | 1 | 21 | 1 |
| Karnataka | 169 | 14 | 195 | 19 | 3 | 2 | 39 | 5 |
| Kerala | 231 | 19 | 250 | 21 | 5 | 2 | 46 | 6 |
| Madhya Pradesh | 157 | 23 | 249 | 20 | 4 | - | 60 | 3 |
| Maharastra | 103 | 16 | 235 | 19 | 3 | 1 | 111 | 8 |
| Manipur | 278 | 13 | 315 | 25 | 101 | 21 | 141 | 53 |
| Meghalaya | 302 | 31 | 352 | 41 | 16 | 7 | 129 | 79 |
| Negaland | 148 | 338 | 198 | 433 | - | 4 | 36 | 477 |
| Orissa | 161 | 31 | 305 | 40 | 5 | 2 | 196 | 17 |
| Punjab | 162 | 8 | 172 | 9 | 5 | - | 8 | - |
| Rajasthan | 217 | 6 | 249 | 6 | 10 | 1 | 39 | 2 |
| Sikkim | 139 | 2 | 169 | - | 52 | - | 64 | - |
| Tamil Nadu | 170 | 11 | 197 | 14 | 3 | 1 | 43 | 2 |
| Tripura | 402 | 22 | 462 | 22 | 8 | 3 | 124 | 27 |
| Uttar Pradesh | 192 | 9 | 236 | 14 | 10 | 1 | 32 | 7 |
| West Bengal | 304 | 17 | 362 | 13 | 5 | 1 | 53 | 8 |
| Andaman & Nicobar | 127 | 58 | 268 | 109 | 5 | 10 | 35 | 34 |
| Arunachal Pradesh | 62 | 18 | 139 | 8 | 13 | 9 | 40 | 21 |
| Chandigarh | 185 | 7 | 212 | 7 | 5 | - | 5 | - |
| Dadra & Nagar Haveli | - | - | - | - | - | - | - | - |
| Delhi | 181 | 18 | 197 | 13 | 11 | - | 15 | - |
| Goa,Daman & Diu | 154 | 11 | 181 | 11 | 8 | - | 19 | 4 |
| Lakshadweep | 244 | 28 | 251 | 47 | 6 | - | 198 | 39 |
| Mizoram | 397 | 48 | 484 | 49 | 206 | 66 | 378 | 80 |
| Pondicherry | 138 | 22 | 157 | 22 | 7 | - | 60 | 19 |
| All India | 182 | 15 | 239 | 18 | 7 | 1 | 53 | 6 |

2504065804

Source: https://www.industrydocuments.ucsf.edu/docs/lqnl0000

Figure - 23

Consumption of tobacco per 1000 persons by age and sex
All India 1987 - 88

| Forms of tobacco | Rural/ Urban | Age in years 0 - 14 | | 15 - 24 | | 25 - 44 | | 45 - 59 | | 60 & above | | All ages | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | M | F | M | F | M | F | M | F | M | F | M | F |
| Smoking | Rural | 6 | 1 | 180 | 17 | 519 | 38 | 567 | 68 | 456 | 61 | 252 | 25 |
| | Urban | 3 | - | 94 | 4 | 394 | 11 | 452 | 27 | 332 | 28 | 197 | 8 |
| Chewing | Rural | 4 | 4 | 89 | 30 | 239 | 87 | 317 | 149 | 307 | 150 | 130 | 56 |
| Zarda etc. | Urban | 2 | 1 | 37 | 10 | 135 | 42 | 182 | 106 | 153 | 119 | 73 | 33 |
| Snuff | Rural | 1 | - | 5 | 3 | 13 | 11 | 19 | 25 | 20 | 33 | 8 | 9 |
| | Urban | - | - | 1 | 2 | 7 | 7 | 14 | 15 | 22 | 20 | 5 | 6 |
| Burnt tobacco | Rural | 8 | 8 | 32 | 34 | 45 | 50 | 58 | 60 | 50 | 51 | 30 | 33 |
| powder/paste | Urban | 4 | 5 | 14 | 18 | 25 | 27 | 35 | 32 | 20 | 27 | 16 | 17 |
| Consumption | Rural | 16 | 14 | 268 | 78 | 689 | 169 | 792 | 274 | 702 | 269 | 353 | 111 |
| in any form | Urban | 7 | 6 | 132 | 33 | 494 | 78 | 593 | 163 | 472 | 178 | 257 | 59 |

(Source : NSSO Govt. of India 34rd round 1987-88)



250906580S

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

d) Per-capita monthly expenditure on tobacco :

Per-capita monthly expenditure on tobacco in rural and urban areas was respectively Rs.2.9 and 3.6, which constituted 1.8% & 1.4% respectively of the total percapita expenditure, as shown in Figure 24, given below. Further per-capita expenditure on tobacco constituted 5.1% and 3.2% of the total per-capita expenditure on non-food items in rural and urban communities respectively.

Figure - 24

Per-capita monthly expenditure on tobacco
(1987-88) - All India

| Item | Unit of consu-ption | Rural | | Urban | |
|---|---|---|---|---|---|
| | | Quantity consumed | Value (Rs.) | Quantity consumed | Value (Rs.) |
| Bidi | No. | 50.58 | 1.96 | 40.29 | 1.66 |
| Cigarette | No. | 1.02 | 0.26 | 5.21 | 1.56 |
| Tobacco leaf | Kg. | 0.02 | 0.42 | 0.01 | 0.20 |
| Snuff | gm | 1.14 | 0.03 | 0.73 | 0.02 |
| Others | - | - | 0.23 | - | 0.12 |
| Total | | | 2.90 | | 3.56 |

(Source : N.S.S.O., Govt. of India 43rd round).

Notani et al. (1980), on the basis of adult population and an estimated daily intake of 15 bidis/10 cigarettes a day, came to the conclusion that there were 115 million smokers in India, 52-50% males & 2.7-2.5% females. Gupta's ('88) projection of sex-wise consumption based on around 217 000 house to house studies gave a range of 62-82% male and 15-67% for female who consumed tobacco.

A study of ICMR indicated the prevalence of tobacco usage varying from 56-64% in males and 14-43% in females (1981-1984).

2504065806

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

In a survey by ICMR of tobacco habits in Goa, it was observed that 40% of all habituates had acquired the habit by the age of 20 years. The major reasons for intiating the tobacco habit among males were influence of friends 71.4%, relieving constipation 14.1%, passing time 19-26%, as a medicine 11-16%. Among females, the major reasons were influence of friends 76.7% initating elders 19.8%. It was also observed that among females 8% gave suppression of hunger, being the reason for initiating tobacco habit (ICMR, 1988).

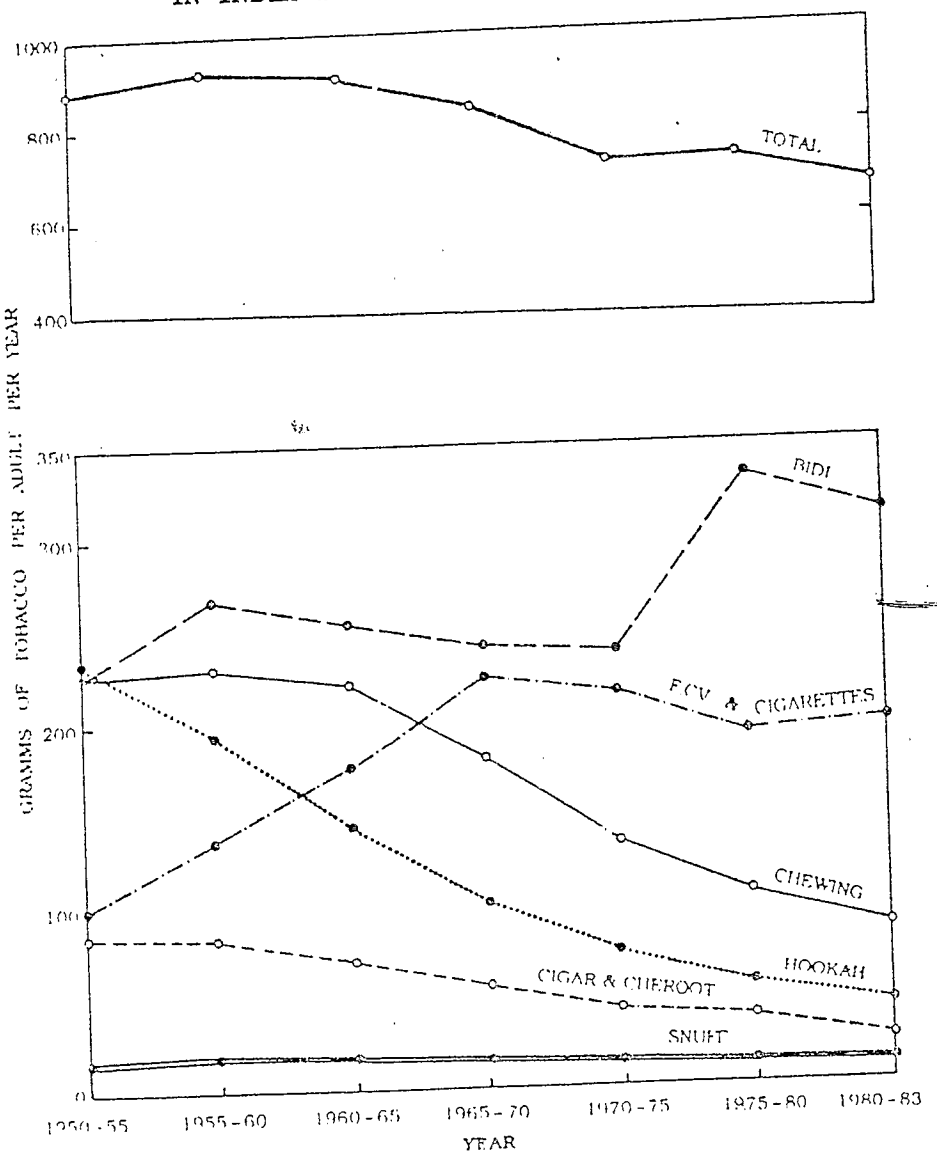
From 1950-55 to 1980-83, total tobacco consumption per adult per year came down from an average 900g during 1950-55 to 700g during 1980-83, with chewing, hookah, cigar, cheroot and snuff having all declined and bidi & cigarette (specially the former) registered a rise. This is shown in Figure 25.

25040658807

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

Figure - 25

TOBACCO CONSUMPTION IN GRAMMES PER ADULT PER YEAR
IN INDIA FROM 1950-1955 TO 1980-1983




(Sanghvi 1989)

2504065808

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

Figure - 26

'Consumption of cigarette (av.) per adult (15+) population in a few selected countries (1989)

| Country | Cigarette consumption ('000 m.) | Per capita consumption | Filter % |
|---|---|---|---|
| Canada | 47.6 | 2300 | 99 |
| USA | 533.0 | 2780 | 96 |
| Brazil | 162.2 | 1710 | 99 |
| Mexico | 52.0 | 1010 | 77 |
| Belgium/Luxembourg | 17.6 | 2070 | 91 |
| France | 94.9 | 2120 | 76 |
| Germany (FRG) | 118.6 | 2260 | 93 |
| Greece | 28.7 | 3570 | 95 |
| Italy | 97.4 | 2050 | 97 |
| Spain | 79.8 | 2560 | 99 |
| UK | 97.3 | 2100 | 98 |
| Iceland | 0.4 | 2240 | NA |
| Switzerland | 16.0 | 2930 | 97 |
| Bulgaria | 16.5 | 2270 | |
| Checkoslovakia | 26.4 | 2220 | 98 |
| Hungary | 26.9 | 3220 | 92 |
| Poland | 95.1 | 3350 | NA |
| Romania | 31.9 | 1790 | NA |
| USSR | 468.0 | 2180 | NA |
| Yugoslavia | 55.8 | 3060 | 99 |
| Ghana | 1.7 | 220 | 95 |
| Kenya | 6.2 | 510 | 68 |
| Malawi | 1.1 | 250 | 73 |
| Bangladesh | 15.2 | 250 | 41 |
| India* | 84.2 | 160 | 50 |
| Pakistan | 31.7 | 530 | 93 |
| Sri Lanka | 4.8 | 440 | 93 |
| China | 157.0 | 2120 | 42 |
| Indonesia | 16.1 | 1300 | 70 |
| Japan | 313.8 | 3100 | 99 |
| Hongkong | 7.1 | 1570 | 98 |
| Korea (South) | 91.7 | 2930 | 100 |
| Malaysia | 17.8 | 1660 | 98 |
| Philippines | 67.8 | 1910 | 91 |
| Thailand | 36.9 | 1010 | 86 |
| Australia | 34.8 | 2650 | 99 |
| New Zealand | 4.6 | 1770 | 98 |

* Excludes Bidi & chewing which if added, would make the figure 600 instead of 160, upon adjustment of quantity in Kg. and unit sale usage.

2504065809

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

Figure - 27

Trend of consumption of cigarette per adult (15+) population by countries

(No. of cigarettes)

| | 1970-74 | China | Year | India |
|---|---|---|---|---|
| USSR | + 10% | NA | 1969 | 200 |
| Poland | + 14% | NA | 1970 | 200 |
| Hungary | + 15% | NA | 1971 | 190 |
| Romania | + 23% | NA | 1972 | 190 |
| Checkoslovakia | + 32% | NA | 1973 | 190 |
| Bulgaria | + 36% | NA | 1974 | 180 |
| Yugoslavia | + 47% | NA | 1975 | 190 |
| GDR | + 54% | 840 | 1976 | 180 |
| Average | + 16% | 890 | 1977 | 180 |
| | | 900 | 1978 | 190 |
| | | 990 | 1979 | 200 |
| | | 1110 | 1980 | 190 |
| | | 1190 | 1981 | 210 |
| | | 1190 | 1982 | 220 |
| | | 1330 | 1983 | 180 |
| | | 1470 | 1984 | 180 |
| | | 1570 | 1985 | 170 |
| | | 1660 | 1986 | 170 |
| | | 1760 | 1987 | 150 |
| | | 2080 | 1988 | 160 |
| | | 2120 | 1989 | 160 |

2504065810

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

Figure - 28

Tobacco consumption per adult per annum, by country or area

| | All tobacco goods (kg) | | | |
|---|---|---|---|---|
| | 1935 | 1950 | 1965 | 1973 |
| *Argentina | 2.0 | 2.1 | 2.0 | 2.2 |
| Australia | 1.8 | 2.9 | 3.4 | 3.4 |
| Austria | 1.7 | 1.5 | 2.2 | 2.7 |
| *Barbados | - | - | 1.2 | 1.7 |
| Belgium | 3.2 | 2.8 | 3.5 | 3.9 |
| *Brazil | 2.5 | 2.6 | 2.1 | 2.0 |
| Canada | 2.2 | 3.4 | 4.6 | 4.5 |
| *Chile | - | - | 1.1 | 1.4 |
| *Costa Rica | - | - | 1.7 | 1.6 |
| Denmark | 3.0 | 3.7 | 3.7 | 3.6 |
| *El Salvador | - | - | 1.7 | 1.5 |
| Finland | 1.2 | 1.6 | 2.0 | 2.4 |
| France | 1.7 | 1.9 | 2.4 | 2.7 |
| Germany, Fed. Rep. | - | 1.9 | 2.8 | 3.1 |
| *Ghana | - | - | 0.5 | 0.6 |
| Greece | 1.1 | 1.8 | 2.2 | 2.9 |
| *Hong Kong | - | - | 3.1 | 2.5 |
| Iceland | 1.2 | 2.2 | 3.0 | 3.4 |
| 8India | 0.9 | 0.9 | 0.8 | 0.6 |
| *Indonesia | - | - | - | 0.8 |
| Ireland | 2.0 | 3.1 | 3.0 | 3.1 |
| Italy | 0.9 | 0.9 | 1.7 | 2.0 |
| *Jamaica | - | - | 1.3 | 1.4 |
| Japan | 1.4 | 1.4 | 2.4 | 3.3 |
| *Kenya | - | - | 0.4 | 0.4 |
| *Malawi | - | - | 0.1 | 0.2 |
| *Malaysia | - | - | 1.4 | 1.5 |
| *Mauritius | - | - | 1.3 | 1.5 |
| *Mexico | 1.5 | 1.5 | 1.5 | 1.4 |
| *Morocco | 0.4 | 0.6 | 0.7 | 0.8 |
| Netherlands | 3.8 | 3.4 | 4.2 | 4.5 |
| New Zealand | 2.0 | 3.3 | 3.4 | 3.2 |
| *Nicaragua | - | - | 1.0 | 1.2 |
| Norway | 1.4 | 1.9 | 2.1 | 2.4 |
| *Pakistan | - | - | 1.7 | 1.7 |
| Portugal | 0.6 | 0.9 | 1.2 | 1.5 |
| *Sierra Leone | - | - | 0.7 | 0.6 |
| *Singapore | - | - | 2.7 | 2.9 |
| South Africa | 1.5 | 2.2 | 2.1 | 2.3 |
| Spain | 1.6 | 1.4 | 2.0 | 2.5 |
| Sweden | 1.6 | 1.9 | 2.1 | 1.8 |
| *Switzerland | 2.1 | 2.7 | 4.1 | 4.3 |
| *Turkey | 1.2 | 1.4 | 2.0 | 4.8 |
| United Kingdom | 2.2 | 2.6 | 2.7 | 2.8 |
| USA | 3.5 | 4.6 | 4.9 | 4.2 |
| *Venezuela | - | - | - | - |

* Denotes developing countries

(Source : Report of the WHO Committee on Smoking Control, 1979)

250406581

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

## Morbidity in India

### Tobacco related diseases

Based on the estimated 1986 total population of 760 million (390 million males and 370 million females), the incidence of new cases per year of major tobacco related diseases in India was estimated by Notani et al. (1989), as follows :

a) Cancer : 270,000

b) Cardiovascular disease (CVD) in the 40-49 age group 320,000 to 448,000.

Coronary heart diseases (CHD) : 1,300,000

c) Chronic obstruction Lung disease (COLD) : 7 to 13 million

However, after examining observations of Sapru (1989) they arrived at the following conclusions :

Figure - 29

Tobacco related diseases ('000)
1989 population

| | Cases | | |
|---|---|---|---|
| | Male | Female | Total |
| Cancer (a) | 233 | 27 | 270 (63%) |
| Cancer (b) | N.A. | N.A. | N.A. |
| CHD (age $\geqslant$ 30 years) | 1,212 | 58 | 1,270 (21%) |
| Cardiovascular | N.A. | N.A. | N.A. |
| Peripheral vascular (age $\geqslant$ 40 years) | N.A. | N.A. | N.A. |
| COLD (age $\geqslant$ 15 years) | 9,420 | 440 | 9,860 (45%) |

(a) = upper alimentary & respiratory tracts
(b) = other tobacco related cancers
% = indicates number of tobacco related cases to the total number of cases of the disease category.

2504065812

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

Parkins (1984) mentioned that of the 5.8m. new cancer cases in the world, 50% were in developing countries.

## Tobacco related cancers

a) Figure - 30

Tobacco related cancer in India, estimates for 1986

| Site wise cancer | Male | Female | Total |
|---|---|---|---|
| Total population Millions | 390 | 370 | 760 |
| Crude rate/100,000 | 70 | 80 | 75 |
| No. of new cases/year | 273,000 | 296,000 | 569,000 |
| New cases related to tobacco habits : | | | |
| Mouth | 20,888 | 24,642 | 55,530 |
| Pharynx & larynx | 42,159 | 9,435 | 51,594 |
| Oesophagus | 20,280 | 14,874 | 35, 154 |
| Lung | 23,673 | 4,477 | 28,150 |
| Others | 13,000 | 6,572 | 19,572 |
| Total | 130,000 (48 %) | 60,000 (20 %) | 190,000 (33 %) |

(Sanghvi 1989 based on 1982-1983 National Cancer Registery, 3 P/B registers, 3 H/R registers)

b) Site-wise cancer in India % wise is given in Figure -32.

c) Tata Memorial Hospital 1970 - 72 Figure - 31

| | M | F |
|---|---|---|
| Lung cancer | 5.7 % | 0.9 % |
| Tongue | 15.5 % | 3.3 % |
| Mouth | 10.3 % | 6.6 % |
| Pharynx | 23.6 % | 4.5 % |
| Oesophagus | 11.3 % | 8.1 % |
| Stomach | 1.7 % | 1.0 % |
| Colon Rectum | 2.9 % | 1.7 % |
| Larynx | 1.8 % | 0.8 % |
| Breast | 0.1 % | 17.9 % |
| Cervix | - | 35.5 % |
| Prostate | 0.7 % | - |
| Bladder | 1.1 % | 0.3 % |

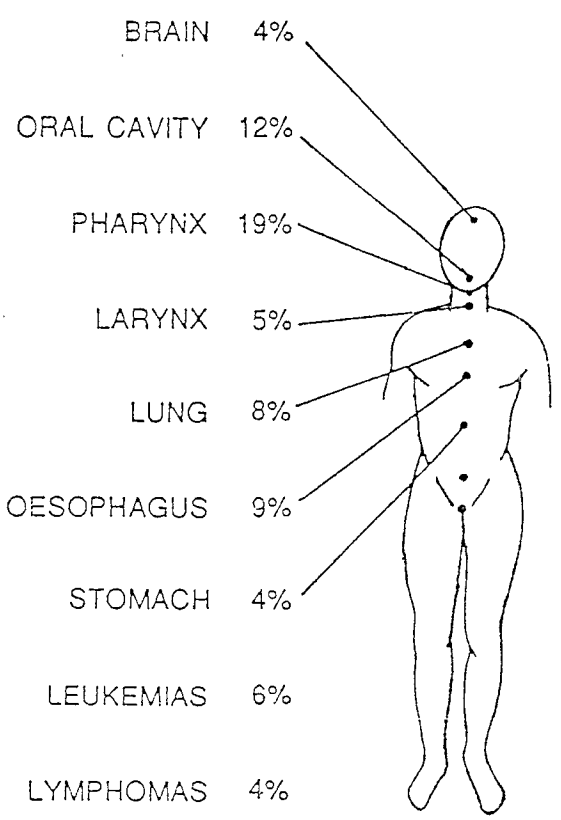
(Jussawalla et al. 1973)

25040659813

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

Figure - 32

## Cancer Patient Load in Hospital Registries in India.




*(Estimates based on weighted averages of data from Bangalore, Bombay, Chandigarh, Dibrugarh, Madras, Trivandrum for 1986)*

(Source : National Cancer Registry)

25040658 14

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

d) According to Madan, Dhawan & Saha, 1986, Buccal mucosa (cheek) cancer was 35% of all cancer cases :

Figure - 33

| | Age group | Incidence |
|---|---|---|
| Cheek cancer | 41 - 50 | 40.0 % |
| | 51 - 60 | 29.1 % |

| | No. of cases M | F |
|---|---|---|
| Tobacco Chewers | 72.5 | 72.0 % |
| Non tobacco | 30.0 | 27.0 % |

**Sex wise product wise incidence**

Sample surveys in 7 selected areas with high prevalence of oral cancer showed

Figure - 34

Habit of chewing in 11 - 55 % in males
10 - 39 % in females

Habit of smoking in 8 - 77 % in males
(not common, 2 - 12 % in females).

Risk ratios of incidence of major tobacco related diseases among smokers in relation to non-smokers, have been given as follows :

Figure - 35

a) Major tobacco related cancers

| Site | Risk Ratio Chewer | Smoker | Chewer & Smoker |
|---|---|---|---|
| Oral cavity | 6.0 | 2.8 | 10.1 |
| Oropharynx | 3.3 | 11.8 | 31.7 |
| Hypopharynx | 6.2 | 3.6 | 16.9 |
| Larynx | 4.6 | 7.7 | 20.1 |
| Oesophagus | 2.5 | 2.2 | 6.2 |
| Lung | - | 14.9(bidi) 10.2(Cig.) | - |

(Jussawalla et al. 1971 and 1979)

25040658 15

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

b) Cardiovascular diseases (CVD)

Figure - 36

Risk Ratio

| | Bidi Smoker | | Cigarette Smoker | |
|---|---|---|---|---|
| | CHD | MI | CHD | MI |
| Case-control study | 3.1 | 3.8 | 2.5 | 3.3 |
| Cohort of blue collar worker | 3.3 | 3.0 | 3.0 | 2.8 |
| Cohort of white collar worker | - | - | 1.1 | 1.6 |

CHD = Coronary heart disease
MI = Myocardiac infarction

(Based on 2 studies, one case-control and another cohort by Notani et al., 1989)

c) Chronic obstructive lung cancer (COLD)

Figure - 37

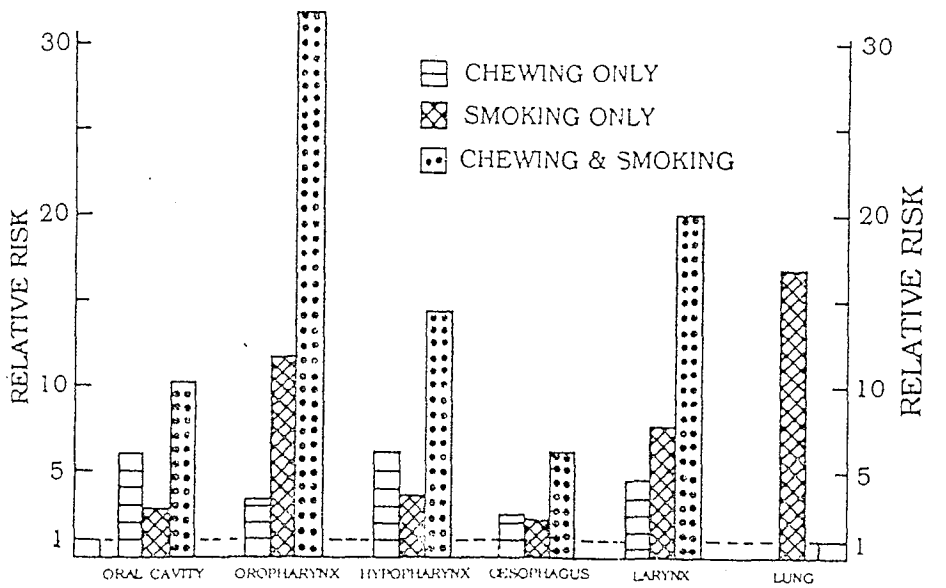
Risk ratio

| | |
|---|---|
| Cigarette smoker | 3.3 |
| Bidi smoker | 3.9 |
| Hookah smoker | 9.7 |

(Based on one study in Chandigarh by Malik and Wahi, 1980)

Figure - 38

Relative risk of developing cancers by site and tobacco usage




(Sanghvi, 1989)

250406816

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

## Cancer of oral cavity

Distribution of high incidence of oral cavity and cancer of the pharynx, as a % of total cancers by principal countries of prevalence, given as follows : Figure - 39

| Type | (a) Hong Kong | (b) Bas-Rhin (France) | (c) Bombay (India) | (d) Bangladesh M | F |
|---|---|---|---|---|---|
| Buccal cavity & Pharynx | 41.6 | 40.5 | 30.3 | 22.0 | 16.3 |
| Lip | 0.3 | 0.2 | 0.3 | 0.9 | 0.8 |
| Tongue | 2.4 | 7.4 | 10.2 | 4.7 | 3.1 |
| Salivary gland | 1.0 | 1.0 | 0.4 | 1.6 | 1.3 |
| Mouth | 2.7 | 9.6 | 5.8 | 4.1 | 8.3 |
| Oropharynx | 1.0 | 11.6 | 4.7 | 4.1 | 2.3 |
| Nasopharynx | 1.3 | 10.2 | 8.2 | 1.1 | 0.5 |

(a), (b) and (c) by Staszewaski (1986), mentions other major prevelance in Latin countries and among Blacks in USA.

(d) by Rahim (1986), Research Programme (CERC) 1976-81.

Notes : Hong Kong, France & India have considerable divergence in tobacco usage. In the first two countries the habit of chewing tobacco is absent. Dietary habits are different in all the 3 countries. Hong Kong & France have heavy alcohol usage. In India, tobacco is used with betel quid. Some alcohol consumption reported.

In B'desh, the general sex ratio in cancer is male to female 3 to 1, whereas in the case of oral cancer, this is 1:2. Chewing and smoking and their composition, similar to neighbouring countries in S.E.Asia. Oral hygiene the same. No Khaini is taken. Alcohol is prohibited. Age distribution of oral cancer for both sexes peak at 45-54.

2504065817

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

Mortality in India

The problems of identifying the cause of death arises from the fact that only a small proportion of the dead population is medically certified :

Figure - 40

Medically certified deaths as % of total registered deaths under Scheme of Medical Certificate of cause of death, 80 - 84.

| | All India |
|---|---|
| 1980 | 13.61 |
| 1981 | 13.66 |
| 1982 | 15.72 |
| 1983 | 14.58 |
| 1984 | 17.08 |

A 1984 study on All-India distribution of death by age, sex & major causes showed :

Figure - 41

| | | Male | Female | Total | % of total |
|---|---|---|---|---|---|
| 1 | Infection & parasitic | 27,000 | 17,500 | 44,500 | 21.9 |
| 2 | Neoplasms | 5,300 | 3,200 | 8,500 | 4.2 |
| 3 | Endoctrine, Metabolic diseases & immunity disorder | 3,000 | 2,700 | 5,700 | 2.8 |
| 4 | Diseases of blood & blood forming organs | 2,700 | 2,600 | 5,300 | 2.6 |
| 5 | Mental disorder | 103 | 45 | 148 | - |
| 6 | Diseases of the Nervous system & sense organs | 4,900 | 3,300 | 8,200 | 4.0 |
| 7 | Circulatory system | 26,839 | 15,743 | 42,582 | 21.0 |
| 8 | Respiratory system | 11,605 | 8,600 | 20,205 | 9.9 |
| 9 | Digestive system | 7,300 | 2,900 | 10,200 | 5.0 |
| 10 | Genito-urinary | 1,900 | 1,100 | 3,000 | 1.5 |
| 11 | Pregnancy related | - | 2,090 | 2,090 | 1.0 |
| 12 | Skin/subcutaneous tissue | 208 | 137 | 345 | - |
| 13 | Musculoskelateral & connective tissue | 68 | 56 | 124 | - |
| 14 | Congenital disorder | 1,012 | 684 | 1,696 | 0.8 |
| 15 | Prenatal period | 9,520 | 6,800 | 16,320 | 8.0 |
| 16 | Ill defined | 9,600 | 770 | 10,370 | 5.1 |
| 17 | Injury & poisoning | 9,300 | 6,900 | 16,200 | 8.0 |
| | Total | 1,21,075 | 82,360 | 2,30,045 | 100.0 |

250406818

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

1986 Mortality (some major causes, % to total deaths)

| | | |
|---|---|---|
| Respiratory | - | 7.7 |
| Central nervous system | - | 19.7 |
| Circulatory | - | 3.7 |

Percentage distribution of death by sex for different age groups to total deaths by different cause groups - All-India (under Medical Certification Scheme, 1984)

Figure - 42

| | Age groups | | | |
|---|---|---|---|---|
| | Less than 1 | 25-44 | 45-64 | 65+ |
| Cancer | | | | |
| Male | | 12.3 | 49.8 | 31.2 |
| Female | | 17.9 | 52.1 | 29.7 |
| Respiratory | | | | |
| Male | 27.8 | 8.2 | 21.3 | 21.7 |
| Female | 33.7 | 8.2 | 15.8 | 19.7 |
| Circulatory | | | | |
| Male | | | 42.5 | 37.6 |
| Female | | | 32.8 | 44.3 |

(blanks above denote insignificance)

Percentage distribution of deaths by sex for different age groups, to total deaths by different cause groups, 1984 as above.

Figure - 43

| | Age groups | | | | |
|---|---|---|---|---|---|
| | 1-4 | 5-14 | 25-44 | 45-64 | 65+ |
| Cancer | | | | | |
| Male | | | 3.1 | 8.1 | 7.1 |
| Female | | | 3.3 | 16.3 | 6.9 |
| Respiratory | | | | | |
| Male | 15.1 | 4.7 | 5.8 | 7.5 | 10.4 |
| Female | 17.8 | 15.5 | 5.2 | 8.9 | 10.3 |
| Circulatory | | | | | |
| Male | | | 15.3 | 34.5 | 41.3 |
| Female | | | 15.4 | 33.5 | 41.1 |

(blanks above denote insignificance)

25040658 19

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

A survey on the cause of rural deaths, 1986 showed the following :

Figure - 44 (Percentage)

| Cause | Reported Death No. | Age 15-24 | 25-34 | 35-44 | 45-54 | 55+ |
|---|---|---|---|---|---|---|
| 1 Asthma & bronchitis | 1,588 | 1.0 | 2.4 | 5.1 | 11.9 | 73.7 |
| 2 TB of lungs | 966 | 7.4 | 17.6 | 20.8 | 20.7 | 29.0 |
| 3 Pneumonia | 965 | 1.6 | 2.8 | 1.7 | 1.8 | 6.5 |
| 4 Heart attack | 886 | 4.6 | 7.1 | 11.2 | 20.9 | 54.4 |
| 5 Anaemia | 557 | 4.3 | 5.4 | 4.7 | 9.7 | 34.1 |
| 6 Cancer | 529 | 1.9 | 6.4 | 14.0 | 21.9 | 51.4 |
| 7 Gastro Enteritis | 397 | 7.5 | 6.0 | 3.3 | 47.5 | 22.7 |
| 8 Dysentry | 356 | 7.5 | | | | |
| 9 Typhoid | 334 | 10.8 | | | | |
| 10 Malaria | 296 | 8.8 | | | | |
| All cases | 18,262 | 4.8 | 5.0 | 5.9 | 89.1 | 46.2 |

Figure - 45

Causes of death (rural) Annual Report, 1986, Serial 3, No.19

(Percentage)

| | 82 | 83 | 84 | 85 | 86 |
|---|---|---|---|---|---|
| Accident & injuries | 5.9 | 5.5 | 6.0 | 6.3 | 7.0 |
| Natural death | 1.0 | 1.2 | 1.0 | 1.2 | 1.0 |
| Fever | 9.3 | 10.2 | 10.3 | 9.3 | 10.4 |
| Digestive | 7.3 | 7.4 | 7.4 | 7.6 | 7.7 |
| Coughs (respiratory) | 19.7 | 20.2 | 20.3 | 20.8 | 19.7 |
| Central nervous system | 3.7 | 4.5 | 3.8 | 4.2 | 3.7 |
| Disease of circulation | 8.9 | 9.1 | 9.6 | 9.9 | 9.0 |
| Other clear symptom | 8.0 | 7.4 | 7.8 | 8.9 | 8.6 |
| Serility | 11.7 | 11.0 | 11.0 | 10.3 | 10.5 |
| Others | 22.6 | 23.2 | 22.3 | 21.5 | 22.1 |

Figure - 46

Death by Dysentry & Gastro Enteritis, 1987

| | Dysentry Cases | Dysentry Deaths | Gastro Enteritis Cases | Gastro Enteritis Deaths |
|---|---|---|---|---|
| Total | 87,41,081 | 2,109 | 13,38,594 | 4,501 |

25040658 20

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

Tobacco related mortality

Figure – 47

a) Estimated tobacco related deaths by cause in the adult (≥ 15 years) population of the country (1986)

| Cause of death | Total deaths ('000) | | | Avoidable deaths ('000) | | |
|---|---|---|---|---|---|---|
| | M | F | Total | M | F | Total |
| Cancer(a) | 77 | 33 | 110 | 61 | 8 | 69 (63%)+ |
| CHD | 290 | 160 | 450 | 97 | 4 | 101 (22%)+ |
| Cerebro-vascular | 75 | 75 | 150 | 25 | 2 | 27 (18%)+ |
| COLD | 250 | 100 | 350 | 150 | 7 | 157 (45%)+ |
| Total | 692 | 368 | 1060 | 333 | 21 | 354 |
| | | | (21%) | (63%) | (21%) | (56%) |
| All cases | | | 5000 | 530 | 99 | 629 |
| | | | (100%) | (100%) | (100%) | (100%) |

(a) in upper alimentary & respiratory tract

(Notani et al. 1989)

[Sapru, working on Registrar General's report :

(a) Heart diseases 51% of all deaths = 500,000, all ages (1986)
(15+ = 450,000 above)

(b) COLD 26.3% of all deaths = 378,000
(15+ = 350,000)

c) All cancer 2.52% of all deaths = 247,000 (1988)
(Age-sex-specific = 293,000)]

2504065821

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

b) **Cancer by site (tobacco related)** - Bombay Cancer registry

Figure - 48

Estimates of cancer deaths and avoidable deaths of tobacco related sites in the country (1986 pop.)

| Site | Estimated No.of cancer deaths (in '000) Total deaths | | | Avoidable deaths | | |
|---|---|---|---|---|---|---|
| | M | F | Total | M | F | Total |
| Oral Cavity | 11 | 9 | 20 | 9 | 3 | 12 |
| Pharynx & larynx | 27 | 7 | 34 | 25 | 2 | 27 |
| Oeso-phagus | 17 | 13 | 30 | 9 | 2 | 11 |
| Lung | 22 | 4 | 26 | 18 | 1 | 19 |
| Total | 77 | 33 | 110 | 61 (79%) | 8 (24%) | 69 (68%) |

(Notani et al. 1989)

c) **CVD and COLD** (1986 pop.)

Figure - 49

| Cause of death | Range in total deaths ('000) | Range of avoidable deaths ('000) |
|---|---|---|
| Ischemic heart disease | 300 - 700 | 66 - 151 (22%) |
| Cerebrovascular | 120 - 200 | 22 - 35 (18%) |
| Other diseases of arteries | 11 - 22 | - |
| Bronchitis, emphysema, asthma | 250 - 460 | 110 - 210 (45%) |

(Notani et al. 1989)

d) COLD

Bombay city data : 400,000
(Notani et al. 1989)

: 250,000 to 460,000
(Mahashur, 1989)

2504065822

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

Role of WHO

Recommendations of the 1974 WHO expert committee on smoking and its effects on health

Governments should accept the responsibility of carrying out smoking control action by their own agencies and of stimulating nongovernmental organisations to take action also. Action should include the dissemination of information, support for activities to help people to stop smoking, the promotion of legislation if further powers are needed, and research.

Governments should develop a procedure for identifying whether or not a serious health problem associated with smoking either exists in the country or may be anticipated, and, if there is such a problem, the government should consider the establishment of a central committee or other appropriate machinery to coordinate and supervise specific programmes for the control and prevention of tobacco smoking.

Objectives should be as follows :

as few young people as possible should start smoking and those doing so should start as late as possible;

as many smokers as possible should be encouraged and assisted to stop smoking;

those who are unable to stop smoking should try to reduce their exposure to such harmful substances in smoke as tar, nicotine, and carbon monoxide;

to require that packets of cigarettes and advertisements carry an effective warning statement that smoking is dangerous to health; provision should be made for the information given and the form of wording used to be varied from time to time so that the message does not become stale;

to determine the magnitude and nature of the problem of smoking, and to assess the smoking behaviour and the attitudes towards smoking of the general public, of the health and education professions, and of other opinion leaders;

2504065823

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

to determine, if possible, the cost to the country of smoking by calculating the excess of work-days lost by smokers, both from absence due to sickness and from premature death, and the cost of caring for those made ill by smoking, as well as the decrease in morbidity and mortality that could be expected to follow a reduction in smoking. These figures would provide a basis for planning, evaluation, and budgeting of programmes for the control of smoking.

Non-smoking should be regarded as the normal social behaviour and that all action which can promote the development of this attitude be taken.

There should be a total prohibition of all forms of tobacco promotion.

Promotion of the export of tobacco and tobacco products should be discouraged. Tobacco-growing and manufacturing industries should be progressively reduced in size as rapidly as possible,

Governments should recognise the serious dangers for smokers in certain industrial occupations and develop special programmes to eradicate smoking from these industries, introducing legislation where necessary. The synergism observed between smoking and certain occupation implies the need for careful monitoring in industries where toxic inhalation is a problem and indicates the need for research in this area.

Upper limits should be established for appropriate emission products of cigarettes. These limits (currently for tar, nicotine, and carbon monoxide) should be progressively lowered as rapidly as possible. Every tobacco should contain a health warning and information on emission levels.

The developing countries that have a recognisable smoking problem should attempt to control it by the means elaborated in this report, and countries so far without such a problem should give high priority to policies directed at the prevention of smoking.

2504065824

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

This implies the development of data collection systems to delineate the problem, the adoption of the necessary legislation, and the use of educational techniques suitable to the sociocultural situation, particularly those where communication is difficult.

No country should allow a tobacco-growing or manufacturing industry to be developed. Where such an industry exists, priority should be given to the development of subsitute crops, with international cooperation.

The WHO has anticipated approach of the opposition (against smoking control) as follows :

The approach of the "Opposition" to smoking and health problems is predictable and its arguments may be considered, broadly speaking, to fall into seven main categories :

1) denial of the evidence on smoking and disease;

2) claims that other, more urgent problems should be attended to instead;

3) claims that smoking is a matter of personal choice and smoking control activity is an infringement of essential human freedom;

4) claims that any proposed action would be ineffective;

5) claims that the tobacco industry can be persuaded to act responsibly;

7) claims that tobacco advertising is aimed only at brand-switching and not at increasing sales.

Resolution WHA 39.14 adopted in 1986 by the 39th World Health Assembly mentioned "the use of Tobacco in all its form is incompatible with the attainment of health for all by the year 2000 AD."

2504065825

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

## Indian Govt. tobacco control measures

Indian govt. strategies to control tobacco consumption have taken the form of socio-behavioural interventions (banning tobacco in public places etc.), pharmocological and psychological interventions (quality aspects of tobacco products, TV and radio propaganda etc.) economic interventions (gradual price rise of tobacco products etc.) and political actions.

The Cigarette Act of 1975 seeks to check health problems associated with tobacco usage, attempts to regulate the production, supply and distribution of cigarettes besides making it mandatory for manufacturers and retailers to prominently display the statutory warning, "cigarette smoking is injurious to health", on cartons and hoarding.

From 1 Apr 1976 all manufacturers and persons trading in cigarettes are required to display prominently the statutory warning "Cigarette Smoking is injurious to health" on all cartons and packets of cigarettes that are put in sale.

Most state governments in India have promulgated laws prohibiting smoking in closed areas such as cinemas, buses, educational institutions and hospitals etc. Some states engaged primary health workers in the early detection of cancer during their routine house to house check up.

National Cancer Control Boards at the centre, and state Cancer Control Boards at state levels carry out primary prevention of tobacco related diseases.

With effect from 14 Jun 1990, cigarette shops were removed from govt. buildings.

In order to protect the non-smoking public from the hazards of passive smoking, at least in public places where large number of people are present for prolonged periods, it has been decided to prohibit tobacco smoking.

2504065826

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

To start with, the ban was imposed in a few selected places like hospitals, dispensaries and other health-care establishments, educational institutions, conference rooms, domestic flights, air-conditined sleeper coaches in trains, subsurban trains and air-conditioned buses.

A more restrictive and punitive anti-tobacco legislation is being comtemplated. The proposed legislation includes a rise in the price of tobacco, banning of tobacco advertisement in the media and public places, making it unlawful to sell tobacco products to those below the age of 18 years, sale of cigarettes in packets as opposed to selling them singly and prohibition of the sale of tobacco in and around educational, health and religious institutions.

Besides, it is proposed that tobacco acreages will be reduced significantly and to totally ban advertisements (including sponsor-ships).

The ICMR has claimed that health care cost in 1986-87 on account of tobacco related diseases exceeded govt.'s excise revenue by Rs.685 crores and amounted to Rs.2419 crores.

2504065827

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

## Discussion

We begin with an examination of what have been claimed as tobacco-related diseases.

Cancer will be discussed in two parts: lung cancer with which cigarette has been associated in the developed countries (bidi and cheroot also to be associated with this disease in India) and oral and pharyngeal cancer which is the main cancer-type among male in India associated with the consumption of bidi and chewing tobacco. These will be followed by the two other main diseases associated with tobacco, viz., cardio-vascular diseases (CVD), including coronary heart diseases (CHD) (circulatory diseases) and chronic obstructive lung diseases (COLD) (respiratory diseases).

### Lung cancer

Following early studies (pages 1 & 2) on smoking and lung cancer, the US Surgeon General conclude in 1964 that cigarette smoking was the major cause of lung cancer in men, with the Royal College of Physicians reporting (page 8) on Smoking and Health (1971) the highest mortality ratio for this disease. However, Fisher and Burch (page 11) and Resenblatt (page 12) disagree with the Surgeon General's conclusions. The Royal College of Physicians admit that only a minority of heavy smokers get lung cancer. Buhler (page 12) does not accept smoking - causation of lung cancer. Fisher (page 12 & 13) shows that its increase in white females was the same for smokers and non-smokers. The Bethesda (1985 study) (page 13) fails to develop squamous cell lung cancer over a 9-year old study on 10,000 mice. Furst (page 13) corroborated the Bethesda findings in his animal studies. Eysenck criticises (page 15 to 22) the methodology of arriving at risk ratios and a few criteria for causal significance of tobacco with concerned diseases. He urges examination of other especially genetic factors, before coming at conclusions.

The WHO (page 26) state that laboratory models for the production of diseases due to smoking are not satisfactory other than for lung cancer. WHO (page 43) state 'in one study involving long term exposure of rats to cigarette smoke, tumours of the respiratory tract were induced',

2504065828

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

'Studies in rabbit and dogs of whole cigarette smoke were inadequate for evaluation', 'Experiment on carcinogenically of gaseous phase of cigarette in hamsters and rats resulted in negative or inadequate findings. An increased incidence of lung tumours was observed in one study in mice', thus proving studies for lung cancers on animals have been extremely few in number. Also the type of tumours produced is not mentioned. Yet WHO state (page 42) 'there was sufficient evidence that inhalation of tobacco smoke condensate cause cancer in experimental animals. Now there is sufficient evidence that tobacco smoke was carcinogenic to human. The occurrence of malignant tumours of the respiratory tract and of the upper digestive tract is causally related to the smoking of different forms of tobacco (cigarette, cigar, pipe, bidis), the WHO raise the questions of genotypes who develop lung cancer.

The tar yield (1982 figures) of Indian cigarettes (page 28) at 17-22mg/ cigarette, although on the high side in comparison with similar yields in most developed countries, was not inferior to France and Italy.

WHO (pages 29-30) conclude that lung cancer has "association reflecting causation" and point out (pages 32-33) that variations in smoking habits, dose of consumption, and duration of smoking are important variables.

Dose-inputs of any form of tobacco per adult capita is among the lowest in the world and on this logic the incidence of, lung cancer should be very modest. WHO point out (page 32) that until smoking has been common for many year the incidence of the diseases may not appear at first sight.

Bidi smoking in this country in India has been prevalent for over 100 years and cigarette, around 60 years and no major incidence of lung cancer has yet appeared across the country attracting attention.

The comparatively low incidence of lung cancer deaths among cancer deaths in Japan in comparison with USA, West Germany, France and U.K. (pages 34-38) raises a very important question of the morbidity's causal relationship with cigarette smoking. At a per capita consumption of cigarette per adult population of 3210 per annum, death in Japan by lung cancer of all cancer deaths was 15.4% This was 26.2% in USA at

2504065829

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

an incidence level of 3250 and 16% in W. Germany, at an incidence level of only 2320, 28% lower than Japan.

Lung cancer as a percentage of new cancer is 9.4% in developing countries as against 15.8% in the developed countries, presumably reflecting among other factors, a lower incidence of smoking. WHO have reported (page 41) that the risk of lung cancer is particularly dependent on duration of smoking. The longer the time period during which a major proportion of adult in a population have smoked the greater is the incidence and mortality from the disease in the population, risk being proportional to the number of cigarette smoked.

WHO also mentions (page 42) of lung cancer risk increasing with high dose of exposure to alcohol, suggestion for the control of which in terms of lung cancer control either from WHO or Indian Govt. has been notably absent.

Incidence of all smoking (pages 52 & 53) among rural male in India is 24% and urban male 18%, with rural and urban female smoking, negligible. Age-group wise the incidence of smoking amongst rural male is 18% in the 15-24 age range, 52% in the 25-44 range and 56% in the 45-59 age group. In the urban centres it is 9%, 39%, 45% and 33% respectively for the age groups; overall inicidence, of all ages being 25% among rural male and 20%, urban male.

Teen-age consumption in India is less than in most developed countries. Hence, as a primary target audience for smoking control, they have a low priority. Further, assuming that tobacco-related diseases need an exposure period of around 20 years, diseases should arrive progressively more at say 45 plus age groups, at least upto 65 years. However, figures 42 and 43 (page 68) show a decline in cancer after the 45-65 age group. Site wise, age wise figures are not available. There is some confirmation of our argument in figure 44. However, without sex or site-wise classification, no conclusion could be drawn.

The Indian incidence of consumption of cigarette (pages 57,68 and 59) has been declining since 1950-1955. Total tobacco consumption is down. Within the group since 1970-75, bidi consumption has gone up. For

2504065830

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

all others, there has been a decline since 1965-70. Hence the dose inputs of tobacco into the Indian population have been declining. Page 58 shows that among the listed 37 countries, the average consumption of cigarette per adult population is the lowest, including bidi and chewing tobacco after adjusting for quantity in Kg. and unit sale, at 600, the computed incidence of Indian consumption is still among the 7 lowest consuming countries.

The incidence of lung cancer in India varies between 6 to 8% of all new cancer cases (figures 31 and 32), a much lower level than most developed countries and the average for the developing countries.

The WHO estimate (page 39) that globally there are 143 cases per 100,000 population. Applying this ratio crudely to the current Indian population of 840 million the total cancer cases in India should be around 1.2 million. At an incidence rate of 8% of lung cancer of all cancer cases, the number of such cases in India should not exceed 96,000 persons.

Due to non-availibility of data (only 17% mortality being medically certified, figure 40), mortality by cause figures are difficult to obtain in India.

A few studies under medical certification have been made. Figure 41 (page 67) shows death by neoplasms is 4.2% of all deaths in India. According to figure 44 (page 69), death by cancer is 2.9% of all rural deaths.

In conclusion, although the US Surgeon General says that smoking is the major cause of lung cancer in men and the WHO has placed under its category A, suggesting 'association relecting causation' it does not necessarily follow that this should be necessarily so in Indian condition.

The evidence of occurence of lung cancer in Japan (page 35) casts significant doubts in the causation theory being accepted a level of dosage of tobacco automatically causing cancer. The needle here points to genetic, dietary or other unknown factors. In any case, the per adult capita Indian consumption at 160 cigarettes or an equivalent of 600 cigarettes, both among the lowest in the world, should not qualify

2504065831

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

cigarette (and partly bidi) as a serious hazard for lung cancer. With the consumption stagnant or declining, this is unlikely to be so in the forseeable future.

Oral Cancer

The US Surgeon General concludes (1964) (page 4) that cigarette smoking is the cause of cancer oflaryngeal and oral cancer. The Royal College of Physicians (1971) arrive at mortality ratio of 5.4, 4.1 and 3.4 for cancers of the larynx, oral cavity and the oesophagus (page 8).

The WHO (pages 29-30) put cancer of oesophagus, lip, tongue, mouth, pharynx anf larynx under category C, denoting 'positive association (of tobacco) of uncertain character'. Yet, they mention (page 41) that 'tobacco smoking is an important cause of oral, oesophageal, hypopharyngeal, laryngeal and oesphhageal cancers'.

In the developed countries the incidence of this combined group of all cancers is 10.5%, as against 25.2% in developing countries (page 40). WHO says that oral cancer is South East Asia is a result of chewing tobacco and betel nuts (page 41). It also introduces the concept that the rise of these cancers is substantially increased in conjunction with high dose of exposure to alcohol.

In hamsters, various experiments demonstrated reproducibly the induction of laryngeal carcinomas (WHO) (page 43). In India, Niblock (1902) and Orr (1933) report incidence of oral cancer among betel leaf chewers (page 46). Sanghvi et al. (1955) find a significant role of bidi and chewing tobacco in incidences of oral cancer, with the incidence being higher where both bidi and chewing tobacco were consumed (page 46). Notani et al. (1989) say that 63% of morbidities of cancer in the upper alimentary and respiratory tracts are tobacco related. 'Since they form only 1% of the total morbidity, the overall impact is limited' (page 48).

The dose - impact of chewing tobacco in the target audience is small, because only 8% or rural males, 5% of urban males, 5% of rural females and 3 % of urban females chew tobacco (page 50).

2504065832

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

As in smoking, chewing habit in India starts late at 25-44 age-level and peaks at 45-59 age-level (page 54).

At a per capita monthly expenditure of only 0.02 Kg. in rural areas and 0.01 Kg. in urban areas, the dose of chewing tobacco among the population is extremely modest. However, the expenditure per month on bidi @ 50.58 units in rural areas and 40.29 units in urban areas is comparatively higher, although modest in terms of smoking consumption in developed countries at around 17 bidis in rural areas and 13 bidis a day (page 55).

Consumption of chewng tobacco has been declining since 1955-60 (page 62).

Sanghvi (1959) arrives at an estimate of total mouth, pharynx, larynx and oesophagus cancer population in 1986 of 142,000 (page 62, figure 30), but does not explain how he arrived at the crude incidence rates.

The Tata Memorial Hospital (190-72) mention that among males, the incidence of oral, pharynx and larynx cancer is 62.5% and 23.3% among females, of the cancer cases (page 62).

The weighted average from the National Cancer Registry in Bangalore, Bombay, Chandigarh, Dibrugarh, Madras & Trivandrum. for 1986 for oral cavity, pharynx, larynx and oesophagus is 45% for males and 18.9% for females, of all cancer cases (page 63).

The risk ratio of cancer in these types is the highest when the consumer is both a chewer and smoker.

Figure 39 (page 66) is self explanatory, suggesting that oral cancer occurs only as an inter-play of various factors (Staszewaski, 1986) and not due to tobacco consumption alone. The part played by tobaccoin oral cancer needs further investigation.

2504065833

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

**Cardiovascular disease (CVD)/Coronary heart disease (CHD)**

The 1964 Surgeon General (1967) finds that smoking would cause death from coronary heart disease (page 2). He finds (page 4) that smoking increased mortality from CVD (stroke) and atherosclerotic peripheral vascular disease.

Marks and Emerson (1974); Pollock, Swiss study (1951-76); Handley and Teather (1974); Sterling (1977) claim no adverse effect of tobacco on CHD (page 13) with Schievelbein (1973) agreeing after experiments on animals. Keys (1962) also agrees (page 21) with their views.

Seltzer (1968) concludes that duration of cigarette smoking had no correlationship with CHD in terms of evidence upto 1984 (page 22). Commenting on the Framingham data, he concludes (page 24) that the risk of developing CHD increases with the total duration of smoking, this important study having concluded that cigarette smoking is only acutely (not chronically) connected with cigarette smoking, suggesting that it had no deleterious effect on those with a normal, healthy coronary apparatus (page 22).

Eysenck (page 25) claims that personality factors were more predictive of death from cancer or heart disease than was smoking, and in particular, ways of coping with stress (page 25).

In an important differentiation, WHO (page 29) splits categories, putting ischaemic heart disease, respiratory heart disease, aortic aneurysm and peripheral vascular disease in Category A where association with tobacco reflected causation and myocardial degeneration, hypertension, arteriosclerosis, cerebral thrombosis and other cerebrovascular diseases in Category C where association with tobacco was positive but of an uncertain character.

S.P.Gupta (1989) states (page 47) that reliable data on the effect of tobacco on cardiovascular diseases was unavailable and consequently, research data had to remain tentative.

Notani et al. (1989) estimate (page 61) mortality of CVD in the 40-49 age group at 320,000 to 448,000 cases and CHD at 1,300,000 cases

2504065834

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

correcting the latter to 1,270,000, being 21% of the total number of tobacco-related cases. However, the estimation was based on two studies in Haryana, one rural and the other urban. Most data on CVD/CHD originate from Bombay Municipal Corporation and Registrar General's records, both inadequate for projection into all-India estimations. All-India 1984 diseases of the circulatory system (Figure 41) were 21.0% of all deaths, second only to infections and parasitic diseases. Sapru (figure 47, page 70) says 51% of all deaths was on account of CHD. Notani et al. 1989 estimated avoidable CHD/CVD mortality at 22% of total avoidable deaths.

The all-India percentage distribution of death by sex for different age groups to total death by cause shows, under Medical Certification Scheme (1984) (figure 42), a decline in deaths for males and increase in females from the 45-64 to 65+ age groups, which is contrary to what should happen if such deaths were entirely tobacco related, with consumption progressively increasing with age from 15 to 59 years (figure 23) for both males and females.

The prevalence of CVD and its link to tobacco & types of tobacco in India has been difficult to estimate (Notani, 1989). Risk factors as suggested by the U.S. Department of Health and Human Services (1983) linking smoking with hypertension and elevated cholesterol levels, acting synergistically and thus to cardiovascular diseases have been assumed in many Indian studies. CHD/MI mortality risk ratios are not available in India. Incidence risk ratios and mortality risk ratios are also not available for cerebrovascular and perepheral vascular diseases (Notani 1989). Risk factors have to established first locally, at a particular time. Eysenck has pointed out (page 17) that there was a r = 0.75 correlation between ischaemic heart diseases and milk consumption and also a correlation of 0.75 between consumption of refined sugar and ischaemic heart diseases, over 45 countries. Therefore, the tobacco related risk has to be adjusted after eliminating other risks.

Stray Indian researches, working on small samples (Bansal et al. 1970, Sharma et al. 1976, Chiniah et al. 1979, Dewan et al. 1974, Jayant et al. 1983, Bordia et al. 1979) have been extrapolated often on a crude or only 15+ basis into national estimates of the disease. Similar important inferences have been made regarding tobaco product type.

2504065833

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

Diognostic data specially in rural areas would often be faulty and medical certification of death assigning cause is largely absent.

We therefore conclude that tobacco relation to CVD/CHD in India should be treated as tentative, not requiring control on tobacco or types of tobacco.

**Chronic obstructive lung disease (COLD)**

In his 1964 report the US Surgeon General suggests that cigarette smoking causes chronic bronchitis and in his 1967 report, 'it was the most important cause of chronic non-neoplastic bronchopulmonary disease in the USA (page 2)'.

The Royal College of Physicians conclude (page 8) in their 1971 report that there was a 6.1 mortality ratio for ronchitis and mphysema due to cigarette smoking (page 8).

Seltzer (1975) finds that there was a difference in mean value of the pulmonary function among White nonsmokers and smokers, although it was the same among Blacks and Orientals (page 21).

WHO (1986) state that it is not possible to show whether the particulate or the vapour phase is more important in the production of (vascular and) chronic obstructive lung diseases (page 26). However, WHO have put COLD in Category A, signifying association reflecting causation (page 29).

WHO point out (para 2, page 32) that 'it is however uncertain how far the effect of smoke in producing COLD is modified by background levels of atmosphere pollution.'

WHO (1986) point out that the risk of disease and the duration of smoking has been worked out most clearly (cancer of the lung) and COLD (pages 32-33). On this logic, COLD should affect mainly the 45+ population who have had about 20 years of exposure. In India (page 68), however, Indian mortality was 27.8% (male) & 33.7% (female)for children of the age group of less than 1 year) (figure 42) and in pre-45 age group (figure 43) it was 25.6% for male and 38.5%, for female.

2504065836

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

Jindal and Malik (1989) find a relationship between cheroot smokers in Shimla hills and South-East Orissa and COLD (page 47).

Studies by Charan in North India, Punjab (1966), Thiruvengadam et al. in Madras city (1979), Viswanathan & Singh in urban and rural Delhi (1977) report wide variations in the disease. Studies in North India, specially in Chandigarh, by Malik (1978 & 1982) and Joshi et al. (1975) bring out differences (and anomalies) in the prevalence of the disease in rural and urban areas.

Sapru (1983) point out that there was a difference in the disease pattern beteen South and North India. Jayant's 1989 estimate of prevalence and mortality due to COLD in India, is based on 15+ population which should be corrected to 45+, different distribution being given in Fig. 18 (page 49).

Notani (1989) mentions that the estimated 400,000 COLD deaths are extrapolation of age-sex-specific death rates of Bombay city to the whole population. In view of Joshi and Sapru's foregoing reservations that differences exist in rural and urban areas, North and South India, this has to be treated with reservation. Also his estimate (1989) that 45% of COLD deaths originate from tobacco usage (page 48) is based on 15+ population, which according to us, should be corrected to 45+ population.

As mentioned earlier the per capita incidence of tobacco in India is low (pages 58-60) because of which, as in the case of lung/oral cancers and CVD/CHD, tobacco's contribution also in the production of COLD cannot be significant.

Figure 44 (page 69) shows no abnormal incidence of death in rural India of Asthma and Bronchitis until the 55+ age group. At the latter level, under Indian conditions, the mortality could easily be due to 'old age', rather than tobacco. If it were tobacco, the 45-54 would have been the first level to be affected.

Figure 45 (page 69) shows Coughs (respiratory) to be steady around 20.1%. Whether it is tobacco related or not the disease remains contained.

2504058837

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

In view of data as above, causal relationship of tobacco with COLD can not be concluded as yet. Neither, any particular tobacco type be identified in production of the disease.

## Indian medical researches

Indian medical researches have usually relied on findings in the developed countries as being axiomatically applicable to India. Also, often, risk ratios are assigned without proving causal relationships and projections of all-India figures are made with inadequate samples.

External variables in the studies of the developed countries are different from India and important, their bulk is based on cigarette which in India has a comparatively smaller share in consumption than the indigenous tobacco products.

Sanghvi (1986) calculates relative risks of developing cancer of the upper alimentary and respiratory tracts among the chewing and smoking population, contravening the very logic of an epidemiological enquiry, taking for granted what is to be proved. The risk ratio only provides an evaluation of the importance of the factor in the production of a disease once its causal effect has been proved. It cannot be used by itself to prove the causal relationship, which may differ according to the population in question, time, genetic and other factors.

Major studies by P.C.Gupta et al. (1980 & 1984) assessing excess mortality caused by tobacco usage in India are on a purposive sample, on a population which reportedly had a high tobacco usage. Prevalence of tobacco habit was found to be (62% to 82%) among men and 15% to 65% among women. In the light of NSS 43rd round 1987 (pages 50 to 54) figures, the all - India average incidence of tobacco consumption is found to be substantially lower. Accordingly, his assessments of all-India morbidity should be revised downwards.

No data on cause of death was obtained. Therefore, whether the smoker died from any of the claimed tobacco related diseases. is not known, neither, was it known how many nonsmokers died out of any claimed tobacco related diseases.

250465838

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

While estimating the number of deaths in their paper on COLD.In India Morbidity amd Mortality Due to Smoking (1989), Jayant and Mahashur's population base is 15+ which should have been 45+. Notani et al. (1989) also assess on the basis of 15+ population.

Sanghvi (1989) uses (page 63) population-based Registries to project country-wide figure. Such registries are biased in that only cancer patients come to such hospitals and do not represent the cancer universe.

WHO

The WHO claim association reflecting causation for 5 claimed tobacco related diseases. However, figures in pages 34-38 on country-wise comparisons of the principal tobacco related diseases indicate that causal factor in lung cancer is still to be proved.

It is a fair question if the WHO is pushing India into wrong priorities, conflicting with more urgent problems of infant mortality, parasitic diseases etc., with an Western disease model based wholly on cigarettes. They ignore tobacco types, usage habits, actual incidence of disease and resource, employment and income generation problems of an under-developed country, and media problems in reaching the target audience.

Indian tobacco control

Decline in the per capita incidence of tobacco consumption started following market forces long before the Cigarette Act of 1975 was enacted (page 57).

However, due to the intruments used by the Govt. borrowed from the developed countries for control of tobacco (and selective use of excise) shifts within tobacco types have occurred.

Controls have in effect, been directed at cigarette although it may not have been necessarily the target audience. Among the tobacco product types, it has the lowest tar and nicotine delivery and lung cancer in India with which principally cigarette is associated (bidi's role in

2504065839

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

this disease not backed by extensive resaerch), is only 8% of all cancers.

At the same time, most of the control intruments have by-passed the problems of oral cancer whose incidence is predominant among all cancers in men with which bidi and chewing tobacco usage has been linked.

Hirayama (1986) suggests nutritional interventions for this disease and Staszwaski (1986) mentions that oral cancer occurs out of an interplay between alcohol drinking, tobacco smoking and chewing, chewing betel nuts, nutritional deficiency and oral hygiene. The Govt. have not initiated any measure on nutritional aspects or alcohol.

Ignoring estimates which as we have shown, have built-in estimation errors, there is no data on the ground on an all-India scale that Cardiovascular/Coronary heart diseases and chronic obstructive lung diseases are as extensive as claimed by Notani et al. (or that they are necessarily tobacco originated). If they were they would have found a place in the National Health Policy 1983 : Health For All in 2000 AD. Targets for prevention of prenatal, infanct, preschool and maternity mortalities, TB, leprosy, blindness etc. have been laid down, but none of the tobacco-related diseases find a place in such targets. Under the circumstances, investments in tobacco control divert resources in the areas given priority in the National Health Policy.

Govt.'s investment in tobacco control would have been on s sounder footing if surveys were conducted first on the tobacco related disease problems. WHO recommends that it be found out by the Govts. if such diseases exist or are likely to exist. The Indian Govt. does nor appear to have followed this advice. Second, controls should have preceded a study on tobacco consumers: why they consume it, time of starting, volume of consumption, number of years consumed etc. For the first time, NSS figures have given some all-India statistics which should lead to substantial corrections of the previous estimates. Only such studies would allow for some understanding of causal effects, allow for appropriate decisions disease-wise, urban - rural-wise, income group-wise, age-wise, sex-wise problems and instruments to be selectively used.

It is important for the Govt. to understand why people consume tobacco. Control does not necessarily mean coercion. People must be provided

2504058440

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

with better, acceptable subsitutes to tobacco specially those in remote rural areas. Without such substitutes, there could be a vacuum, tension, stress or tobacco eventually replaced by products like alcohol or drugs.

It has been suggested that tobacco acreages be reduced and released for other crops. The bulk of tobacco is grown in rainfed areas. It produces a better and more stable cash income than cotton, groundnut etc. which could technically replace tobacco. It does not compete with food crop.

Inter-crop shifts are presently mediated through market forces and if the Govt. wishes to deliberately reduce tobacco acreage, farmers will need to be convinced. If there is to be coercion, the problem will be, how to bring about the change, keeping legal provisions in mind.

A solution might be to restrict the demand for the high tar, high nicotine products through differential taxation imposed at the grower level and thus to restrict demand through pricing.

Further restrictions or banning of tobacco advertisement will prevent consumers from being informed of better quality products. In this connection we refer to the growth in cigarette consumption in Eastern Europe, USSR and China (figure 27, page 59). These command economies, run on the principles of social justice and maximum health care have allowed steady increases in consumption. There has been no advertisement of cigarettes in these countries.

An important unintended effect through neglect of the anti-tobacco posture of the Govt. has been on exports. Between 1975 and 1988, growth in Indian exports was only 21%, as against global 35%, Italy's 809%, Greece's 173%, Malawai's 270%, Zimbabwe's 243%, Brazil's 224%. If India could have at least maintained the average export level of 112 m. Kg. of 1981 and 1982, the value would have been around Rs.670 crores at current prices.

Luthra et al. (1990) mention a figure of Rs.2418.82 crores being spent on diagnosis and health care for tobacco related diseases, but have given no break-up of the diseases covered, allocations among them,

2504065841

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

capital-revenue expenditure break-up, and the morbidity figures that have been estimated.

If they be based largely on cancer, 22 specialised hospitals in 14 States have a patient load in 1987 of 46,524. On a per capita basis Rs.2418.82 crores works out to Rs.5,19,946.

An important cancer hospital which we investigated mentioned an annual recurring expenditure not exceeding Rs.1.50 crore, with capital expenditure around Rs.2 crores, but varying with new instruments being introduced. The hospital has a patient load of 7000 per annum indoor and outdoor, 210 beds utilised through the year and 40 specialists. Per person basis, the revenue to expenditure allowing for depreciation on instruments, comes to Rs.17,000/- per annum.

The total per capita private consumption expenditure in India on medical care and health costs in current prices was Rs.5650 crores in 1986/87. It is difficult to estimate cause-wise morbidity as existing in India. Taking mortality figures given in Figure 41 (page 67), on the assumption all such mortalities are wholly tobacco-related which they are obviously not, deaths by cancer, circulatory and respiratory diseases are about 35% of death by all causes. Thus, the proportionate expenditure should be Rs.1977.5 crores.

The Govt. of which the Health Ministry is a part has the dual responsibility of improving health and preventing hunger.

There is so far no hard data in India as yet that the current incidence of tobacco related diseases is beyond acceptable limits. Without such an evidence, further imposition of punitive control measures on tobacco growing, primary processing, manufacturing, distribution and sale, will result in social and economic costs exceeding health gains.

Even the current stagnation has seeds of the industry turning sick because of inflation. Indeed there is a risk of some of the sectors moving away from tobacco before the Govt. will want them to taking into view larger macro-economic considerations like employment, excise, exports etc.

2504059842

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

If tobacco is to be phased out, alternative arrangements will have to be made at the same time, for those in various sectors like, growers, manufacturers and consumers. Inter-sector balances have to be maintained.

This will be difficult to achieve in India's developing economy perspective. Alternative employment and income opportunities are few and there are severe resource contsraints. The political economy in which the tobacco system operates with many conflicting interests even within its own ministries make for decision-making difficult.

While the current approach to controlling tobacco consumption may or may not mitigate health problems, it has every potential to create hunger all around without such integrated plans.

2504065813

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

## Executive Summary

The Royal College of Physicians (1862) and U.S. Surgeon General (1964) were the two important bodies who pointed out that cigarette caused premature deaths and disabling diseases.

These studies have however been subject to criticisms in various researches.

The 1985 study at Bethesda on 10,000 mice failed to reproduce squamous cell lung cancers.

Hans J Eysenck criticised the methodology adopted in the Royal College and similar studies, pointing out that they were causal interpretations of the statistical association between tobacco and tobacco related diseases and that criteria for causal significances of association were not substantiated. He suggested constitutional and genetic factors for explaining the tobacco related diseases.

The Framingham study suggested that tobacco was only acutely connected, not chronically connected with coronary heart diseases, there being no deleterious effect of tobacco on them with a normal, healthy coronary apparatus. Seltzer, commenting on the results of the Framingham study mentioned the strong possibility of a selection bias in the US Surgeon General's 1983 study on CHD.

According to WHO there are about 43 carconogenic elements in tobacco smoke.

The WHO have placed cancer of the lung; ischaemic and respiratory heart disease; aortic aneurysm, peripheral vascular disease and chronic obstructive lung disease in its A Category of 'association reflecting causation'. Oral cancer, which is the dominant cancer site among men in India, has been put in its C Category, having 'positive association of uncertain character'.

The low incidence of lung cancer amongst Japanese men on a comparative consumption level with the JSA, questions the tobacco-causal theory of lung cancer.

250HO658HH

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

According to WHO, carcinogenicity tests in animals have technical problems. In one study, tumours of the respiratory tract of rats were induced. Other studies were inadequate for evaluation.

Sanghvi et al. showed a significant role of bidis in oral cancer and Bhide et al. gave evidence of several carcinogens in N Rustica.

Incidence of tobacco consumption in India per adult capita in any form is among the lowest in the world and has been declining since 1935. In rural India 34% men use tobacco in some form regularly. This in urban India is 24%. With women consumption is low in both cases.

Hongkong, Bas-rhin (France), India and Bangladesh are among countries which have a high incidence of Oral Cancer. Since the habit of chewing in the first two countries is absent, dietary habits are different in Hongkong, France and India/Bangladesh the tobacco-causal relationship of Oral Cancer has to be questioned.

Age-wise mortality in India does not justify the inference that cancer, respiratory diseases, and circulatory diseases have a significant tobacco-causal relationship.

Tobacco related diseases are dose-specific and usually an exposure of 20 years or so is necessary before morbidity starts. It increases progressively with age.

In India for both cancer and circulatory diseases there is a decline in morbidity after 64 years. In respiratory diseases, its incidence is dominantly in the pre 45 age group.

In India, for lung cancer, genetic, dietary or other unknown factors along with tobacco should be examined for causal relationship. On account of extremely poor incidence of cigarette smokers among adult population, and with stagnating and declining consumption, cigarette does not qualify as a serious health hazard for lung cancer in India.

For oral cancer, alcohol, malnitrution, interplaying with bidi and chewing tobacco should be the setting for examination of incidence of the disease.

2504059845

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000

In order to draw conclusions for cardiovascular/coronary heart diseases, and chronic obstructive lung diseases, Indian researches are inadequate. In any case, estimates of the disease suffer from large estimation errors.

Indian medical researches have usually relied on findings in developed countries as being axiomatically applicable to India, and risk ratios have been assigned without prior proving of cusal realtions as obtaining in India.

The Indian measures for controlling tobacco usage have resulted, by implication, in mainly cigarette being affected adversely. They by-pass bidi and chewing tobacco which are usually associated with oral cancer.

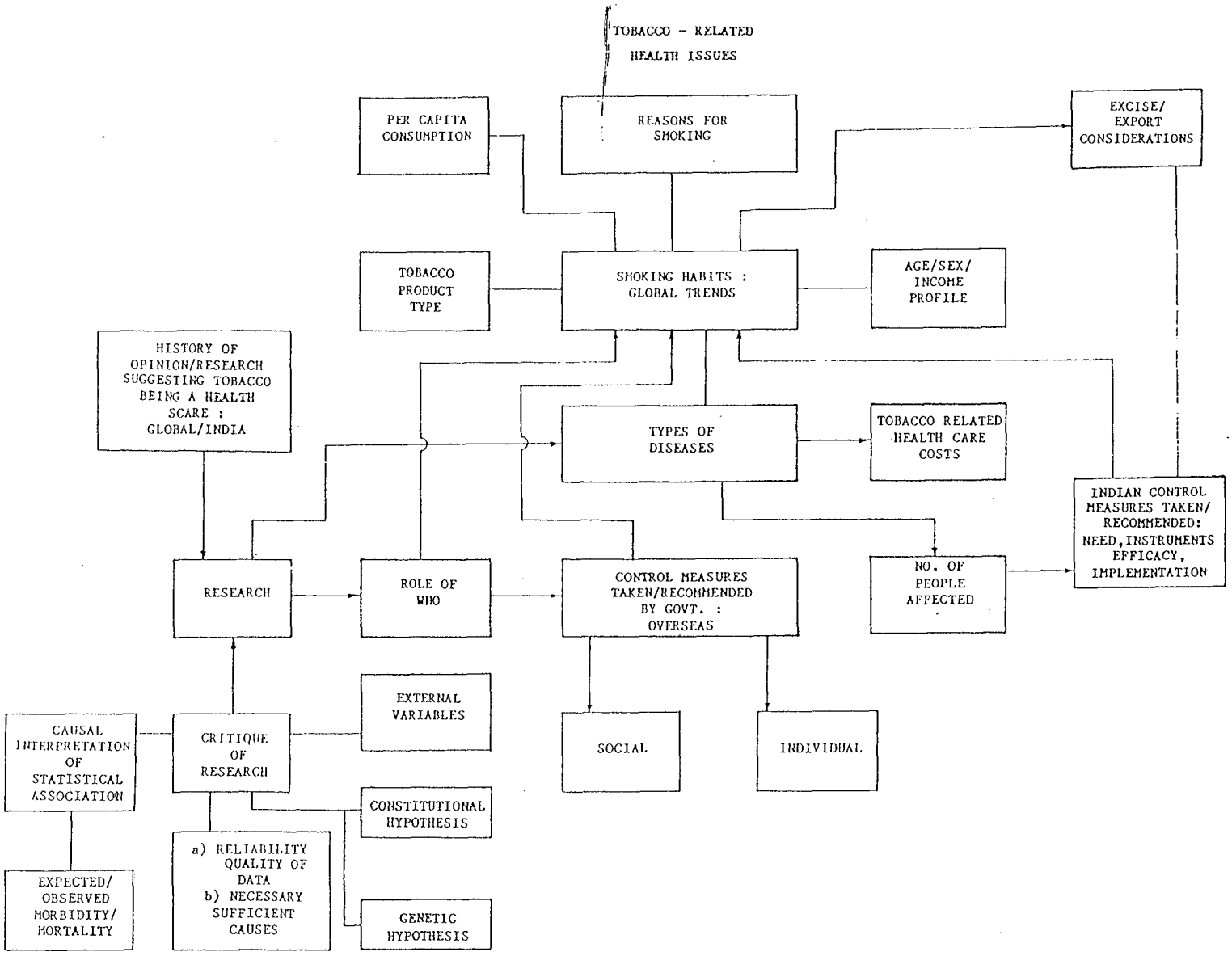
Through neglect, exports of tobacco from India have not grown in line with global trends or principal competing countries.

In order that correct instruments could be used to control what have been claimed to be tobacco related diseases, the goverment should conduct surveys on diseases, consumption pattern and, why people consume tobacco.

The government has the responsibility both for improving health and preventing of hunger. The current stagnation in the industry is likely to turn the industry sick because of secular inflation. If tobacco is to be phased out alternative arrangements for employment, income etc. will have to be made at the same time, keeping inter-sectoral balance (backward and forward linkages). The current trend has the potential to create hunger all-around.

2504065846

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000






2504065897

Source: https://www.industrydocuments.ucsf.edu/docs/lqhl0000